

Issues Paper

Summary of Selected Readings

Background for the 13 November Morning Session

How Fast Will the Soviets Progress in the Information Revolution?

Judgments about the pace of Soviet advance depend on assumptions about how the Soviets will choose between partly incompatible goals. Most authors take as a given that the centralized, socialist Soviet system creates an inhospitable environment for maximizing advance in information technologies and their applications. Thus, as one author (Malik) puts it, the Soviets face an "agonizing dilemma"--balancing the gains of development with the risks of losing political and social control.

Experts differ, of course, over where the Soviets will end up along this continuum, and what the consequences will be for the Soviet position in the world. We summarize below the key elements of a general consensus that seems to emerge-- the Soviets will "muddle through" but will not reach the levels of leading western nations in the year 2000. (see reading 24, Goodman "Advanced Technology: How will the USSR Adjust?", reading 25, Malik, "Communism vs. the Computer," and reading 26, Dizard, "Mikhail Gorbachev's Computer Challenge").

The Ingredients

Even before Gorbachev, most Western experts believed that Soviet information technologies would continue to advance at a healthy rate, benefiting from the traditional impetus of massive resource commitments, exploitation of Western developments, and leadership attention. Gorbachev has given a strong kick to the program, especially in terms of resources. Even so, few observers expect the Soviets to significantly narrow the gap, except possibly in a narrow front of specialty military applications. Most believe the Soviets will remain about ten years behind in most technology areas--that is, in 1995 they will have about the same array of technologies available that we have today. Moreover, within the set of information technologies, most expect to see relatively faster Soviet progress in technologies that lend themselves to a "national program" approach (e.g. telecommunications) and relatively worse off in technologies that don't (e.g. software) (see, for example, reading 12, Selin).

These judgments are predicated on the widely held belief that Gorbachev will not fundamentally change the Soviet system, moving from a Party-dominated command system to a more pluralistic, decentralized system. Gorbachev is moving aggressively on weak links--orienting science to the needs of production; stressing services, maintenance, and computer literacy; and generally trying to create an environment that encourages individual initiative and creativity. These measures are nevertheless conservative. Although many Soviet officials are optimistic, most Westerners believe the

system will remain fundamentally hostile to information technology advance (see reading 27 Graham, "The Soviet Union is Missing Out on the Computer Revolution").

The Applications

Western and Soviet experts seem to agree that information technologies will be applied preferentially in government, science, industry, and, as a means to an end, education. Conservative Soviet authorities write of the need for "unified state control" of information technologies, while even the most vocal believers in information technologies generally write in terms of the provision of centralized services.

In the government, police, and military establishments, information technologies are likely to be extensively applied to support the maintenance of central control. For economic management, computers have been described as the "last great hope of central planning." Although early dreams of "computerizing" the entire economy have been scaled back considerably, computers are likely to find increasingly widespread use at all levels in planning production and supply. With an improved telecommunications network, expanded automated data links will increase Moscow's ability to collect information and convey instructions. In the military, information technologies will continue to be incorporated in weapon applications, but the real frontier is command and control. Soviet military literature extolls such computer applications, and most experts believe that information technologies will be more extensively applied in combat modeling, operational planning

(including reconnaissance and fire support), and strategic battle management. Western authors presume that the KGB and militia will be quick to pioneer surveillance and record-keeping applications, but doubt that the technologies would support truly Orwellian measures of control--at least by the year 2000.

In the economy, most experts expect that the Soviets will apply information technologies extensively in information dissemination, product design, and manufacturing process control. The Soviets have long invested large sums in acquiring and disseminating technical information, and the Soviets are moving to automate this process more extensively. Access to Western data bases will be aggressively pursued. Soviets acknowledge-- and Western experts agree--that computer-aided design will be a very high priority, as the Soviets move into components (e.g. VLSI integrated circuits) and systems (e.g. high performance aircraft) that are either impossible or prohibitively expensive to develop by other means. Computer-aided manufacturing probably will be pursued the most vigorously, because it is so important for Gorbachev's productivity and growth goals. Many Western experts believe the Soviets will succeed in producing large numbers of robots, automated machine tools, materials handling equipment, and control computers, but will not develop an effective, integrated systems approach. "Islands of automation" will spread, but continuing deficiencies in software, maintenance, technical standards, and Soviet incentives will impair comprehensive advance and efficient use.

In the home, Western experts anticipate substantial progress in

entertainment applications but little prospect of a "computer culture" comparable to that in the West. Mass communication services already permeate Soviet society. Given the receptivity of Soviet citizens to radio and (especially) TV, Soviet officials are likely to try to improve the quality, timeliness, and variety of offerings, if only to compete with Western alternatives. At the same time, information technologies are likely to be used in jamming or otherwise interfering with these Western alternatives. Ownership of videocassette recorders and possibly video cameras will become more widespread as Western systems and Soviet products become increasingly available. The apparent Soviet concern over impact of these systems makes it difficult to forecast how rapidly this process will unfold. Ownership of personal telephones will increase, but most experts believe that even by the mid-1990s they will not achieve levels prevalent in the West in the mid-1980s. Finally, most Western experts seem to believe that personal computers will reach Soviet citizens in relatively small numbers. The priority of applications in the computer literacy program and in industry, along with restrictions on imports, makes it unlikely that large numbers would be available to the Soviet consumer before the early 1990s. Deficiencies in or unavailability of peripheral equipment--such as printers or modems--will further restrict personal applications.

What Will Be the Consequences for the Soviets?

If the Soviets do indeed "muddle through", the Soviet Union of the 1990s will be not much different than it is today--a repressive society still playing catch up the the West, but still dangerous militarily. Progress and change will be constrained by and contained within a Soviet system that resemble the current model. Of course, the scenario assumes that the West will generally continue playing the same kind of rôle it does today. The West generally will try to hold the Soviet Union at arms length in its quest for high technology, and to influence the evolution of the Soviet political and social systems mainly by the provision of information.

In the economic and military arenas, most experts believe that information technologies will support continued steady Soviet progress, but that the Soviets will not reach present Western levels of per capita production, quality of life, or military technology by the year 2000. Although no one is willing to hazard a precise forecast, most doubt that Gorbachev will transform the Soviet Union into an engine of economic development, achieving his goal of five percent annual growth in the 1990s. There is at least as much skepticism that Soviet technology and products will become competitive with the best Western alternatives. If so, the Soviets will continue to have an export profile like that of a third world country--selling mainly raw materials. Continuation or worsening of the Soviet position in those markets would impair Soviet ability to

rely on the West. In sum, many Western experts would agree the the chance of the Soviets falling further behind is at least a good chance of their catching up.

On the political and social front, many Western authors imply that there will be a gradual moderation of state control--whether intended or unintended. Gorbachev's campaign to encourage individual and local initiative--plus the technologies he is supporting it with-- requires some moderation. At the same time, Gorbachev acknowledges that the increasingly sophisticated and demanding Soviet citizen must be catered to, and indeed one Western author (Dizard) argue that the Soviet "Yuppie"--and not the dissident--will be the driving force. Among areas of potential Soviet concern are:

- o Direct Western broadcasts, likely to become increasingly accessible to ordinary citizens-- although Soviet cable TV could check this trend (see readings 28, Quester, "Transboundary Television" and 29, Reichlin, "Big Brother's Grip Can Fail"). Paradoxically, to the reported consternation of Soviet Party officials, even Soviet television may have a moderating influence. Television, a major entertainment medium, is undermining the effectiveness of political lectures and other, more traditional means of conveying propaganda.

- o The growing availability of videocassettes, both Western-origin and blank tapes. (see readings 22, Yasman, and 30, Yasman, "Video in the Soviet Union: Trouble With a Capricious Stepchild"). Propagation of "antisocial values" and popular agitation are feared.
- o Direct telecommunication links. Increasing access to telephones (and possibly modems), plus improvement in the national systems at least increases control and surveillance problems for the KGB. The Soviets' 1982 cut-off of international direct dialing illustrates their willingness to take drastic measures.

The Soviet leadership has reason to worry that an increasingly computer-literate citizenry may develop the ability to obtain, manipulate, and transmit unauthorized information, whether at home or on the job. Even within the bounds of the official system, information technologies can be a double-edged sword-- Moscow can use them to centralize and penetrate, but local authorities can use them to deceive. According to Velikhov, Soviet social scientists are also looking into possible consequences of the information revolution that have been discussed in the West--worker alienation, reduced peer contacts. There are also hints of concern over worker "dislocation", if not unemployment.

Even under the scenario of steady if unspectacular Soviet progress, some Western authors have raised the possibility of more

serious conflict or disruption within the Soviet system. One eventuality might be unanticipated by the Soviets--that as information technologies expand, a "cross-over point" is reached--possibly suddenly--at which time developing networks overwhelm the ability of controls (see Malik and Dizard). Alternatively, tension may grow between "conservatives" and "modernizers" as one or both sides become dissatisfied with trends in Soviet economic progress and political control. Disagreement could lead to an abrupt change in policy, with ramifications extending beyond the world of information technologies. It could prompt a dramatic liberalization of the Soviet system, or monumental internal crackdown and external beligerence. Malik, perhaps the most alarmist of the writers on this topic, concludes that "we are on track for a highly dangerous situation."

Discussion Questions

1. Will the Soviets meet their goals for information technology development? How advanced will Soviet microelectronic, computer, telecommunications, and software technologies be in the late 1990s? What key technical or systemic deficiencies will constrain progress?
2. Will Soviet technologies be adequate to support Soviet goals for information technology applications? If not, to what extent can and will the Soviets resort to Western, Japanese, or East European technology to meet these goals? Taking all technology resources into account, what progress will the Soviets make in industrial automation, economic management, social control, and personal applications?
3. How will Soviet progress in information technology applications contribute to broader Soviet economic goals? Will likely Soviet information technology progress endanger Soviet goals for growth in productivity and consumer welfare?
4. Will progress in information technology applications lead to some moderation of political and social control--whether planned or unplanned? Or will information technologies serve mainly to intensify central control? What will be the major forces supporting moderation and intensification? Which

sources of moderation are beyond the Soviets' control, and which of these do they fear most?

5. Do or will the Soviets face a crisis? Will likely progress in applications of information technologies be compatible with goals for both economic development and political and social control? Even if the Soviet officials are content with their apparent progress, will the growth of information technology applications reach a critical concentration that threatens to overwhelm control mechanisms? If Soviet interest groups are unhappy with either the pace of progress or the diminution of central control, is this likely to precipitate a fundamental change in course? What is the more likely eventuality-- sacrifice of progress to preserve control, or the reverse?